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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,153	09/30/2003	Glen H. Handlogten	ROC920030061US1	6418
30206 7590 08/21/2009 IBM CORPORATION ROCHESTER IP LAW DEPT. 917 3605 HIGHWAY 52 NORTH ROCHESTER, MN 55901-7829				
EXAMINER				
BARON, HENRY				
ART UNIT		PAPER NUMBER		
2416				
NOTIFICATION DATE		DELIVERY MODE		
08/21/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

rociplaw@us.ibm.com

### Office Action Summary

**Application No.**

10/676,153

**Applicant(s)**

HANDLOGTEN ET AL.

**Examiner**

HENRY BARON

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2 - 10, and 12 - 21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 - 10 and 12 - 21 is/are allowed.
- 6) ☒ Claim(s) 1, 2 - 6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S5108)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***Detailed Action***

**Hierarchical scheduling**

***Response to Arguments/Remarks***

1. Claims 1, 2 – 10, and 12 – 21 are pending in this application.
2. A Pre-Appeal Brief Request for Review per Applicant's 4/16/2009 request, was made on 7/23/2009 by this Examiner and his supervisor. At the review, it was determined that Applicant's request for reconsideration of the finality of the rejection of the last Office action to be persuasive and, therefore, the finality of that action is withdrawn. It was also determined that claims 1 and 3 – 9 are rejected under 35 USC § 101 for reason presented in this Office Action.
3. After re-opening prosecution and subsequent search and consideration, Examiner finds that claims 1, 3 – 6, are rejected under 35 USC § 103 for reason presented in this Office Action. Examiner finds claims 7 – 10 and 12 – 21 are in condition for allowance with the reason for allowance presented in this office action.

***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:
  - a. Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.
5. Claims 1, 3 – 9 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.
6. Claim 1 recites  
Claim 1 (Previously Presented as of 1/8/2009): A method of hierarchical scheduling comprising:  
receiving data from one or more pipes, each pipe including a plurality of pipe flows;  
selecting a winning pipe from the one or more pipes from which to transmit data based upon one or more quality of service parameters corresponding to the winning pipe;

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selecting a pipe flow from the plurality of pipe flows included in the winning pipe based upon one or more quality of service parameters corresponding to the selected pipe flow; and **transmitting** data from the selected pipe flow using a bandwidth corresponding to the winning pipe flow.

7. Claim 1 is rejected under 35 U.S.C. 101 because they do not fall within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a manufacture or machine), or (2) transform underlying subject matter (such as an article or material) to a different state or thing (Reference the May 15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy, John J. Love, titled "Clarification of 'Processes' under 35 U.S.C. 101 ").

8. The instant claim neither transform underlying subject matter nor recite structure associated with another statutory category, and therefore do not define a statutory process.

9. The claim elements "**receiving data from one or more pipes**" and "**selecting a winning pipe from the one or more pipes**", for example, (1) do not tied to another statutory class (such as a particular apparatus) by identifying the apparatus (e.g. a request manager or a router manager) that accomplishes the method steps; (2) are not structure required by the claim, or positively recited in the body of the claim in association with a step significant to the inventive concept.

10. A claim reciting an adequate structural tie must positively recite the structure of another statutory category in association with a step significant to the inventive concept. The following are examples of structural recitations that do not constitute adequate structural ties per se: (1) Structure recited in a preamble alone, (2) structure in a phrase expressing intended use or purpose, and (3) structure in a step insignificant to the inventive concept, such as nominal pre or post solution activity.

11. Dependent claims 3 – 6 are also rejected for the same reason as set forth above in claim 1.

12. Claims 7 – 9 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

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## 13. Claim 7 recites,

Claim 7 (Original) A method for hierarchical scheduling comprising:  
**receiving** data identifying a pipe flow, the pipe flow included in a pipe;  
**writing** data regarding the pipe to a first calendar; writing data regarding the pipe flow to a second calendar; **scanning** the first calendar for a winning pipe;  
scanning the second calendar for a winning pipe flow; writing the winning pipe flow to a corresponding pipe queue;  
using the winning pipe to select a pipe flow from a corresponding pipe queue; and  
transmitting data from the selected pipe flow..

14. The claim elements " **receiving data from one or more pipes** " and " **writing data regarding the pipe to a first calendar** ", for example, (1) do not tied to another statutory class (such as a particular apparatus) by identifying the apparatus (e.g. a request manager or a router manager) that accomplishes the method steps; (2) are not structure required by the claim, or positively recited in the body of the claim in association with a step significant to the inventive concept.

15. A claim reciting an adequate structural tie must positively recite the structure of another statutory category in association with a step significant to the inventive concept. The following are examples of structural recitations that do not constitute adequate structural ties per se: (1) Structure recited in a preamble alone, (2) structure in a phrase expressing intended use or purpose, and (3) structure in a step insignificant to the inventive concept, such as nominal pre or post solution activity.

16. Dependent claims 8 – 9 are rejected for the same reason as set forth above for claim 7.

### *Claim Rejections - 35 USC § 103*

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

b. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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18. Claims 1 and 3– 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hassan-Ali et al (U.S. Patent Application Publication 2004/0081167), hereafter Hassan-Ali in view of Eberle (U.S. Patent 7020161)

19. Regarding claim 1, Hassan-Ali teaches a network processor and method of hierarchical scheduling comprised of receiving data from one or more pipes; (Figure 12 element 1202 FID 8: [0058] read present invention first maps the [PHY, VPI, VCI] triplet to a unique number, called Flow ID (FID), which allows efficient storage and data structure representation.) selecting a winning pipe from the pipes from which to transmit data based upon quality of service parameters corresponding to the winning pipe; (Figure 12 element 1218-n [0071] read the L2 data structure accordingly contains "winner FID/TS" data from different subports.) selecting a pipe flow from the plurality of pipe flows included in the winning pipe based upon one or more quality of service parameters corresponding to the selected pipe flow; and transmitting data from the selected pipe flow using a bandwidth corresponding to the winning pipe flow. (Figure 12 element 1222 [0072] read the arbitration block 1220 is provided as a CoS-aware, TS-based Priority Round Robin (PRR) mechanism that is operable to select a winner FID 1222 based on service category as well as the time stamp data. Thus, the arbiter 1220 not only determines whether a cell with higher service priority is ready to be serviced in the current time slot i.e. using a bandwidth corresponding to the winning pipe flow, but it also attempts to send a cell having the lowest time stamp as compared to a global time variable).

20. However, Hassan-Ali does not teach of transmitting data from the selected pipe flow using a bandwidth corresponding to the winning pipe flow.

21. Eberle teaches of transmitting data from the selected pipe flow using a bandwidth corresponding to the winning pipe flow. (5: [002] read [a] precalculated schedule can accommodate isochronous traffic e.g. winning pipe flow, by allocating the necessary connection between an input and output port at intervals derived from the rate of the isochronous data stream. That way, an appropriate amount of switch

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bandwidth i.e. bandwidth corresponding to winning pipe flow can be reserved. The claim limitation fails to set forth any functional or structural limitations that would preclude the Examiner's interpretation.

Furthermore, the isochronous data stream is functionally equivalent to the claimed winning pipe flow and the Applicant's remarks, filed 16 April 2009, on page 3 regarding claim 1 fails to define the term "winning pipe flow." Therefore, the Examiner's interpretation is both proper and reasonable under the broadest literal reasonable interpretation standard.)

22. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the hierarchical scheduling teachings of Hassan-Ali to transmitting data from the selected pipe flow using a bandwidth corresponding to the winning pipe flow.

23. Using a bandwidth more than that corresponding to the winning pipe flow would waste bandwidth resources while using a bandwidth corresponding less than that corresponding to the winning pipe flow would be inefficient.

24. Regarding claim 3, Hassan-Ali teaches of selecting a winning pipe from the one or more pipes from which to transmit data based upon one or more quality of service parameters corresponding to the winning pipe includes writing data identifying a pipe to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the pipe and scanning the group of memory addresses to find data identifying a pipe. (7: [0061] read queue manager 812 provides the FIDs stored in a connection memory 814 to a subport scheduler 822 which performs hierarchical scheduling, detailed below, so as to manage traffic shaping and flow routing to elect most eligible connections to send the cells across the fabric.) .

25. In consideration of claims 4, Hassan-Ali teaches of rewriting data identifying the winning pipe to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the winning pipe. (7: [0061] read A scheduler RAM 823 inserts FIDs i.e. winning pipe

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in the subport scheduler's priority queues i.e. memory address, based on such parametrics as the cell's theoretical arrival time (TAT) i.e. quality of service parameter).

26. In consideration of claims 5 – 6, Hassan-Ali teaches of writing data identifying a pipe flow to a memory address in a group of memory addresses based upon one or more quality of service parameters corresponding to the pipe flow; scanning the group of memory addresses to find data identifying a pipe flow; writing the identified pipe flow in a queue corresponding to the winning pipe based upon one or more quality of service parameters corresponding to the selected pipe flow; and selecting the identified pipe flow from the queue corresponding to the winning pipe. (7: [0061] read queue manager 812 provides the FIDs stored in a connection memory 814 to a subport scheduler 822 which performs hierarchical scheduling, detailed below, so as to manage traffic shaping and flow routing to elect most eligible connections to send the cells across the fabric. 7: [0061] read A scheduler RAM 823 inserts FIDs i.e. winning pipe in the subport scheduler's priority queues i.e. memory address, based on such parametrics as the cell's theoretical arrival time (TAT) i.e. quality of service parameter)

### *Allowance*

27. Examiner finds in view of amendments made above, that claims 7 – 10 and 12 – 21 are allowable per their compliance with 35 USC 101, respectively. The reason for allowance are as follows:

28. Claim 7 recites,

Claim 7 (Original) A method for hierarchical scheduling comprising:

receiving data identifying a pipe flow, the pipe flow included in a pipe;

writing data regarding the pipe to a first calendar; writing data regarding the pipe flow to a second calendar; scanning the first calendar for a winning pipe;

scanning the second calendar for a winning pipe flow; writing the winning pipe flow to a corresponding pipe queue;

using the winning pipe to select a pipe flow from a corresponding pipe queue; and

transmitting data from the selected pipe flow.



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29. Examiner found that the claim elements 'writing data regarding the pipe to a first and second calendar; scanning the first and second calendar for a winning pipe' are not disclosed by Hassan-Ali2 or by any of the other prior art.

### ***Conclusion***

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HENRY BARON whose telephone number is (571)270-1748. The examiner can normally be reached on 7:30 AM to 5:00 PM E.S.T. Monday to Friday.

31. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

32. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. B./  
Examiner, Art Unit 2416

**HB**

/Donald L Mills/  
Primary Examiner, Art Unit 2416

